COURSE SYLLABUS

Next Generation Web, 9 credits

Nästa generations webb, 9 högskolepoäng

Course Code:	TNWS20	**Education Cycle:**	Second-cycle level
Confirmed by:	Dean Dec 1, 2019	**Disciplinary domain:**	Technology
Valid From:	Jan 1, 2020	**Subject group:**	DT1
Version:	1	**Specialised in:**	A1F
		Main field of study:	Informatics

Intended Learning Outcomes (ILO)

After a successful course, the student shall:

Knowledge and understanding
- demonstrate comprehension of RESTful Web Service
- demonstrate comprehension of principles, methods and techniques of the Semantic Web and Linked Data
- demonstrate comprehension of vocabularies and schemas for structuring information and resources on the web
- display knowledge of research trends in the areas relevant for new generation web

Skills and abilities
- demonstrate the ability for server-side development
- demonstrate skills of creating a RESTful web service with a web framework
- demonstrate the ability to apply intelligent mechanisms to gathering and processing the data on the web
- demonstrate skills of design and development of web applications with the Semantic and Linked Data technologies

Judgement and approach
- demonstrate the ability to choose an appropriate implementation of a server-side solution based on the principles of service design
- demonstrate the ability to choose applicable methods and tools for more advanced and intelligent web applications based on the Semantic and Linked Data technologies

Contents

Technologies from many different areas, such as Semantic Web, data-mining, machine learning, recommendation agents, and artificial intelligence are driving a new generation of web. These technologies emphasize machine-facilitated understanding of information on the web to provide a more productive and intuitive user experience. In this course students will start with basic solutions on the server side, and then are introduced to the vision of new generation web. They

will understand how the techniques revolutionize the web and its applications.

The course includes the following elements:
- Development of server-side solutions based on the principles of service design
- The client-server model and web framework
- Request routing and web page templates
- Stateless web services, REST API, and JSON serialization
- Storing data in a database and ER-modelling
- Introduction to Semantic Web and its applications
- Using open vocabularies and standard schemas for structuring information
- Linked Data and Open Data
- Semantic Web Languages (such as RDF(S), RDFa, JSON-LD, SPARQL, OWL, etc.)
- RDF graph databases (i.e. RDF triple stores) and their applications

Type of instruction

The course consists of lectures, assignment and laboratory work.

The teaching is conducted in English.

Prerequisites

Passed courses 180 credits in first cycle, at least 90 credits within the major subject in Informatics, Computer Science, Computer Engineering, Interaction Design (with relevant courses in web programming), and completed course User Experience Design 7,5 credits (or equivalent). Proof of English proficiency is required.

Examination and grades

The course is graded 5,4,3 or Fail.

The final grade for the course is based on a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Assignments	2 credits	5/4/3/U
Laboratory work	2 credits	U/G
Project work	5 credits	5/4/3/U

Course literature

Literature

The literature list for the course will be provided one month before the course starts.

Title: Linked Data: Structured Data on the Web
Authors: David Wood, Marsha Zaidman and Luke Ruth
Publisher: Manning Publications

Title: Web Development with Node and Express
Author: Ethan Brown
Publisher: O'Reilly Media, Inc, 2014
ISBN: 978-1-4919-4930-6